



Assessment of a multi-modal intervention for the prevention of catheter-associated urinary tract infections

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SUMMARY

Background: Catheter-associated urinary tract infections (CAUTIs) represent an important healthcare burden.

Aim: To assess the effectiveness of an evidence-based multi-modal, multi-disciplinary intervention intended to improve outcomes by reducing the use of urinary catheters (UCs) and minimizing the incidence of CAUTIs in the internal medicine department of a university hospital.

Methods: A multi-modal intervention was developed, including training sessions, urinary catheterization reminders, surveillance systems, and mechanisms for staff feedback of results. The frequency of UC use and incidence of CAUTIs were recorded in three-month periods before (P1) and during the intervention (P2).

Findings: The catheterization rate decreased significantly during P2 [27.8% vs 16.9%; relative risk (RR): 0.61; 95% confidence interval (CI): 0.57–0.65]. We also observed a reduction in CAUTI risk (18.3 vs 9.8%; RR: 0.53; 95% CI: 0.30–0.93), a reduction in the CAUTI rate per 1000 patient-days [5.5 vs 2.8; incidence ratio (IR): 0.52; 95% CI: 0.28–0.94], and a non-significant decrease in the CAUTI rate per 1000 catheter-days (19.3 vs 16.9; IR: 0.85; 95% CI: 0.46–1.55).

Conclusion: The multi-modal intervention was effective in reducing the catheterization rate and the frequency of CAUTIs.

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Introduction

Urinary tract infections (UTIs) are among the most frequently occurring hospital-acquired infections, representing 20–30% of all infections occurring in acute care hospitals.¹ Virtually all hospital-acquired UTI cases are related to manipulation of the urinary tract, and catheter-associated UTI (CAUTI) is the most

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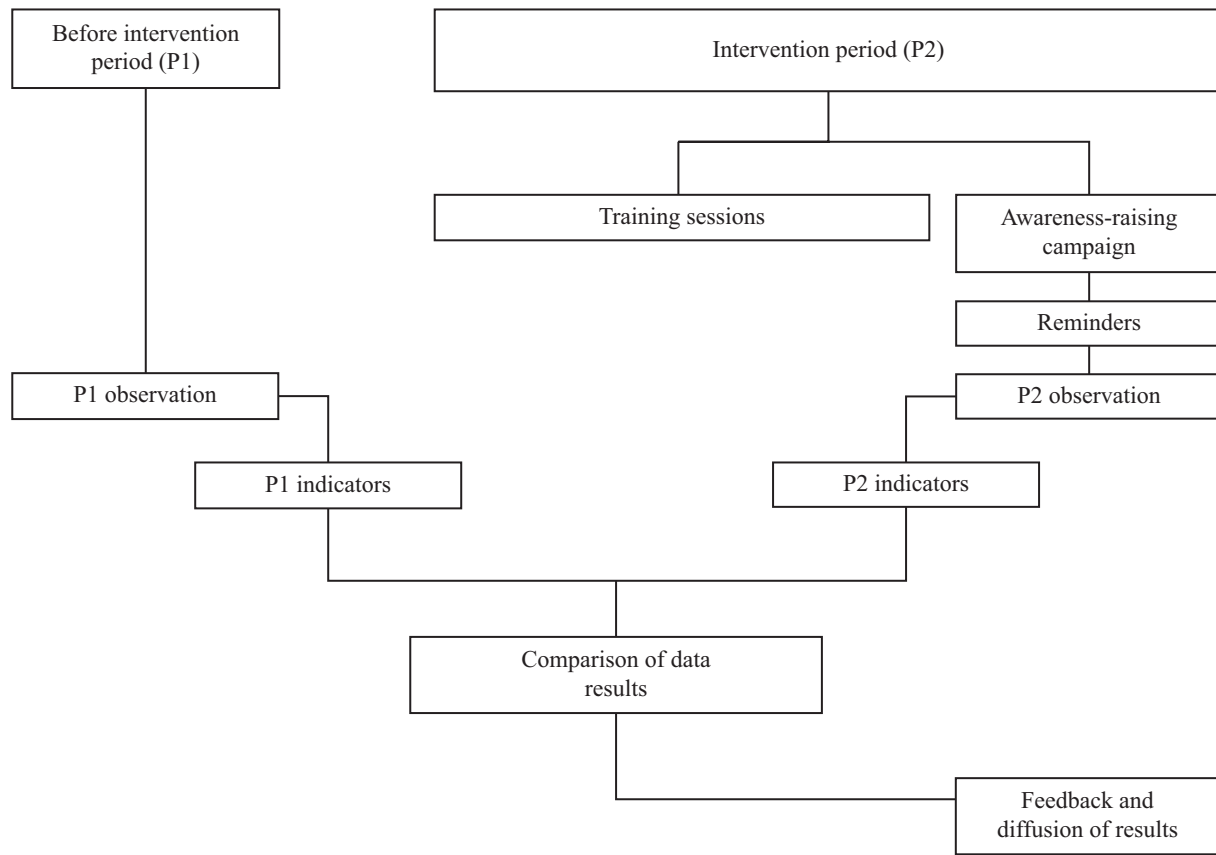


Figure 1. Design, periods and activities of the study.

prevalent device-associated hospital-acquired infection.^{1,2} In Spain, 24–30% of all diagnosed UTI cases in patients hospitalized in non-intensive care unit wards are associated with the presence of a permanent urinary catheter (UC), and 18% of cases are associated with long-term UC use.^{3,4} CAUTIs may lead to severe complications such as pyelonephritis, bacteraemia, and endocarditis, extending hospital stays and increasing morbidity, mortality, and healthcare costs.^{2,5,6} In the USA, it is estimated that more than 13,000 deaths each year are related to CAUTIs.⁵

There are specific recommendations to prevent the occurrence of CAUTI in patients requiring indwelling bladder catheters.^{7,8} Since the most important predictive factor for UTI in these cases is the duration of use, a reduction in catheterization-days is a useful means of reducing CAUTI cases, complications, and associated mortality.^{2,9–12}

Several tools (such as the implementation of reminders or surveillance systems) have been described in the literature and have been effective in the control of device-associated hospital-acquired infections.^{7,11,13–16} As far as we are aware, there have been no published efforts in Spain to reduce the frequency of CAUTI by implementing a comprehensive package of evidence-based measures. The aim of this study was to assess the impact of a multi-modal intervention designed to improve UC use and to reduce the frequency of CAUTI.

Methods

Study location and design

A prospective study with a pre–post design was carried out in the Department of Internal Medicine at the University Hospital of Salamanca.

Inclusion and exclusion criteria

Patients who were admitted to the internal medicine ward with an existing long-term UC, those who had a UC placed within 48 h prior to admission, and those in whom a UC was placed during their stay were included in the study. Patients with non-indwelling catheters, those with catheters for urinary diversion, and those with suprapubic UCs were excluded.

Study protocols

The study was divided into period P1 (January to March 2013, prior to implementation of the multi-modal intervention) and period P2 (April 2013 to April 2014) during which the multi-modal intervention was implemented (Figure 1).

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